

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT  
TEST -2 EXAMINATIONS-2022

M.Sc-III Semester (BT)

**COURSE CODE (CREDITS):** 20MS1BT311(3)

**MAX. MARKS:** 25

**COURSE NAME:** Bioprocess Engineering and Technology

**COURSE INSTRUCTOR:** Dr.Garlapati Vijay Kumar **MAX. TIME:** 1 Hour and 30 Minutes

*Note: All questions are compulsory. Marks are indicated against each question in square brackets.*

- Q1. If you got a chance to do process economics of a bioprocess product, how will you proceed, explain thoroughly by mentioning the formulas used to draw the profitability analysis of the concerned bioproduct? (CO II & CO III) (4 M)
- Q2. How DSP stages vary with the plant-, animal-, microbial-cell based products and explain briefly about the proposed DSP stages? If you got a chance to separate the sulphur-containing- enzyme and Tyrosine-containing enzyme from a mixture, what techniques you will utilize and explain the principle behind the suggested technique briefly? (CO II) (4 M)
- Q3. What are the consequences associated with the “foam formation” and “Head-space maintenance” in fermentor operation/designing? Summarize the features of any two types of immobilized bioreactors? (CO II) (4 M)
- Q4. With a neat sketch differentiates the working principle of CSTR with Air-lift reactor? What is the fate of “substrate” and “by-product” with the bioreactor modes of “Batch”, “Continuous” and “Fed-batch” operations? (CO III) (4 M)
- Q5. Explain the different techniques utilized for “K<sub>la</sub>” determination under bioprocess engineering? Write a note on “External-mass transfer” and “Internal-mass transfer resistance” concepts associated with the Immobilized enzymes? (CO III) (4 M)
- Q6. Write about the following one's (CO I & CO II & CO III) (5M)
- “Degree of cell disruption” under DSP? (1 M)
  - “Scaling Law” under Bioprocess economics? (1M)
  - Physic-chemical principles behind “Pervaporation” and “Lyophilization”? (1 M)
  - Composition of GFC Matrix “Superset”? (1M)
  - Name of the affinity ligands used for separation of “Serine Protease” and “Transcobalamine”? (1M)

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